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EXAMINER	
FINNEREN, RORY B	

ART UNIT	PAPER NUMBER
2828	

DATE MAILED: 05/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/700,956	HOLLAND, WILLIAM D.	
	Examiner	Art Unit	
	Rory Finneren	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 January 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12 and 14-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 14-44* is/are rejected.

7)☒ Claim(s) *43* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Examiner acknowledges amendments of claims 1, 9, 14-16, 18, 19, 22, 24, 29, and 30; the cancellation of claim 13; and the addition of new claims 33-44.

Response to Arguments

Applicant's arguments filed 27 January 2006 have been fully considered but they are not persuasive.

Regarding applicant's arguments as to claim 1, the examiner finds that the amendment to claim 1 does not overcome the Tompkins reference and that the reference still anticipates every limitation of the claim. The examiner would like to address specifically the limitation "...wherein the sampled light beam is used to control a drive level of the light source". The Tompkins reference does read on the limitation when the "light source" is embodied by the group elements 10, 14, 16, and 20 in Fig. 1. The detector 38 samples the light beam and a drive level of the light source (10, 14, 16, 20) is adjusted based upon the signal from detector 38.

In response to applicant's arguments concerning the rejection of claim 5, the examiner would like point out that the lines of the Hsu document directly following the lines referenced in the original action list several advantages of VCSEL lasers and those advantages would have been more than enough motivation for a person skilled in

the art to combine the VCSEL of Hsu with the invention of Tompkins (see Hsu, col. 1, lines 21-35).

In response to applicant's arguments regarding currently amended claim 9, Tompkins discloses *continuous* beam intensity correction (col. 4, lines 10-13). This correction occurs continuously and therefore occurs during scanning of each single line of information as claimed in the new limitation.

In response to applicant's arguments concerning currently amended claim 14, the examiner has determined that the previously cited prior art still reads on every limitation of the claim. Tompkins discloses the claimed *control system configured to maintain the drive level of the laser at a constant drive level during scanning of the line of information onto the photoconductor* as claimed. The final, modulated light beam 18 is generated not just by laser 10 but by the group of components 10, 12, 14, and 16. The AOM 20 is effectively modulating the drive level of the laser and therefore satisfies the limitations in the claim.

Regarding applicant's arguments concerning currently amended claim 18, the examiner has determined that the previously cited prior art still reads on every limitation of the claim. Tompkins discloses *means for generating a light beam* (#10, 14, 16, 20) and *means for generating at a constant drive level using the indication of the sampled light beam during scanning of the line of information onto the photoconductor* (#20). The final, modulated light beam 18 is generated not just by laser 10 but by the group of components 10, 12, 14, and 16 and therefore the disclosure of Tompkins anticipates every limitation of the claim.

Regarding applicant's arguments concerning currently amended claim 22, the examiner has determined that the previously cited prior art still reads on every limitation of the claim. The Tompkins reference clearly discloses *generating a light beam using a light source*. Further, the AOM 20 of Tompkins performs the function of *controlling the light source using the sampled light beam*. The light source is considered to be the set of components 10, 12, 14, 16, 20. This light source of Tompkins is operative to generate the light beam and therefore the reference reads on every limitation in the claim.

Regarding applicant's arguments concerning currently amended independent claim 29, the examiner has determined that the previously cited prior art still reads on every limitation of the claim. The Tompkins reference discloses a "beam intensity correction" system which anticipates the claimed *control system configured to control an intensity of the light beam generated by the laser responsive to the sampled light beam*. The "image engine" taught by Iraki cures the deficiency of Tompkins and the combination of the two teachings would have been obvious to a person of ordinary skill in the art at the time of the invention in order to facilitate the transferring of an image to paper or other media.

Concerning applicant's arguments concerning claim 31, the examiner interprets the "light source" as being the set of components 10, 12, 14, 16, 20 and therefore the reference teaches every limitation in claim 31.

Claim Objections

Claim 43 is objected to because of the following informalities: There appears to be a typo in the claim since a claim cannot depend on itself. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 6-10, 12-25, 27-28, and 31-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Tompkins (4,270,131).

As to claim 1, Tompkins teaches the claimed laser scanning apparatus comprising a light source configured to generate a light beam (Fig. 1, #10); a scanning device optically coupled with the light source and configured to scan the light beam along a photoconductor in a plurality of scan lines (Fig. 1, #34, #36); and a start of scan detector assembly configured to sample the light beam (Fig. 1, #38) and initiate a start-of-scan operation (Col. 5, lines 51-53) of one of the scan lines of information to be written on the photoconductor, and wherein the sampled light beam is used to control a drive level of the light source (Abstract, lines 8-10).

Regarding claim 2, Tompkins discloses a control system configured to receive a signal from the detector assembly and to control the drive level of the light source based on the signal (Fig. 1, #20, "acoustic modulator").

With regard to claim 3, Tompkins discloses processing circuitry configured to compare an indication of the sampled light beam from the signal with a predetermined value (Col. 3, lines 10-14).

As to claim 4, Tompkins teaches a control system configured to maintain the drive level of the light source at a predetermined drive level during scanning of one scan line (Col. 8, lines 65-68).

Regarding claim 6, Tompkins teaches sampling the light beam only once per scan line of information written on the photoconductor, and sampling the beam prior to writing the scan line of information on the photoconductor (Fig. 1, #38; Col. 5, lines 3-6).

With regard to claim 7, Tompkins teaches a scanning device comprising a rotating polygon mirror (Fig. 1, #34, #36).

As to claim 8, Tompkins teaches a start-of-scan detector assembly being disposed outside of the scan area of the photoconductor (Col. 5, lines 3-6; Fig. 1).

Regarding claim 9, Tompkins discloses a laser scanning apparatus comprising: a rotating scanning device configured to scan a light beam from a light source (Fig. 1; #34, #36); a photodetector optically coupled with the rotating scanning device and configured to sample the light beam from the rotating scanning device (Fig. 1, #38); and a control system configured to receive an indication of the sampled light (Fig. 1, #20, "acousto-optic modulator"); and wherein the control system is configured to maintain the light source at a constant drive level during scanning of a single line of information on the photoconductor (Col. 8, lines 65-68; Col. 4, lines 10-12, "beam intensity correction").

With regard to claim 10, Tompkins further teaches a light source configured to emit light in a single direction (Fig. 1, #10).

As to claim 12, Tompkins discloses a control system comprising processing circuitry configured to compare an indication of the sample light beam with a predetermined drive level value, and to control the drive level of the light source based on the comparison (Col. 3, lines 10-14).

With regard to claim 14, Tompkins teaches a laser scanning apparatus comprising: a laser configured to generate a light beam; a scanning device configured to scan the light beam from the laser (Fig. 1, #34, #36); a photodetector optically coupled with the scanning device and configured to sample the light beam only once per line of information scanned onto a photoconductor (Fig. 1, #38); and a control system configured to receive an indication of the sampled light beam from the photodetector and to maintain a drive level of the laser at a constant level during scanning of the line of information onto the photoconductor (Col. 8, lines 65-68; Col. 4, lines 10-12, "beam intensity correction").

As to claim 15, Tompkins further teaches a laser configured to emit a light beam in a single direction (Fig. 1, #10).

Regarding claim 16, Tompkins discloses the claimed apparatus wherein the photodetector is utilized to initiate a start of scan operation of the line of information. (Abstract, lines 2-3).

With regard to claim 17, Tompkins teaches the claimed apparatus wherein the sampled light beam is obtained before scanning a line of information onto the photoconductor (Fig. 1, #38; Col. 2, lines 52-57).

As to claim 18, Tompkins discloses a laser scanning apparatus comprising: means for generating a light beam; means for scanning the light beam onto a photoconductor (Fig 1, #34, 36); means for sampling the light beam which causes information to be scanned onto the photoconductor (Fig. 1, #38); and means for receiving an indication of the sampled light beam from the means for sampling and for maintaining the means for generating at a constant drive level using the indication of the sampled light beam and during scanning of the line of information onto the photoconductor (Fig.1, #20).

Regarding claim 19, Tompkins discloses the claimed apparatus wherein the means for generating comprises a laser (Abstract and Fig. 1, #10).

Regarding claim 20, Tompkins teaches the claimed apparatus wherein the light beam is sampled before writing a scan line of information onto the photoconductor (Fig. 1, #38; Col. 2, lines 52-57).

With regard to claim 21, Tompkins discloses the claimed apparatus wherein the means for sampling is disposed outside of a scan area of the photoconductor (Col. 5, lines 3-6).

As to claim 22, Tompkins discloses a laser scanning method comprising: generating a light beam in a single direction using a light source (Fig. 1, #10); providing a rotating scanning device (Fig. 1, #34) and a photoconductor (Fig. 1, #38); scanning

the light beam along the photoconductor using the rotating scanning device (Fig. 1, #32, #34, #36); sampling the light beam from the rotating scanning device using a sampling assembly (Fig. 1, #38); and controlling the light source using the sampled light beam (Fig. 1, #20; Col. 3, lines 10-14).

Regarding claim 23, Tompkins teaches initiating writing of a scan line of information onto the photoconductor using the sampling assembly (Col. 9, lines 11-28).

With regard to claim 24, Tompkins teaches receiving the sampled light beam in a control system (Col. 2, lines 52-57); comparing an indication of the sampled light beam with a predetermined drive level value (Col. 3, lines 10-14); and wherein the controlling comprises controlling a drive level of the light source responsive to the comparison (Col. 3, lines 10-14, "intensity correction signal").

As to claim 25, Tompkins discloses maintaining an output power of the light source at a constant level during writing of a single scan line of information onto the photoconductor (Col. 4, lines 10-12, "beam intensity correction").

Regarding claim 27, Tompkins teaches performing the sampling only once per scan line of information written on the photoconductor and prior to writing the scan line of information on the photoconductor (Col. 2, lines 52-57).

With regard to claim 28, Tompkins discloses a sampling assembly being located outside of a scan area of the photoconductor (Fig. 1, #38; Col. 5, lines 3-6).

As to claim 31, Tompkins teaches the claimed article of manufacture comprising: processor-usable media ("RAM", Fig. 1, #84, #92) comprising programming configured to cause processing circuitry to: output a control signal to control a light source

configured to generate a light beam used to scan a plurality of scan lines of information onto a photoconductor (Col. 3, lines 4-18); access an output of a start-of-scan detector assembly generated responsive to detection of the light beam thereby, wherein the output indicates appropriate timing for initiation of writing of the information for the respective scan lines (Col. 9, lines 24-28); process the output of the start-of-scan detector assembly (Col. 9, lines 11-28); and adjust the control signal responsive to the processing of the output to adjust an intensity of the light beam generated by the light source (Col. 9, lines 24-28).

Regarding claim 32, Tompkins discloses the claimed article of manufacture wherein the programming is further configured to cause the processing circuitry to adjust the control signal to provide the light beam having a substantially constant intensity during the scanning of the scan lines (Col. 4, lines 10-12, "beam intensity correction").

Regarding claim 37, Tompkins discloses the a apparatus of claim 1, wherein the light source is configured to generate an entirety of the light beam for the first time, and wherein the light beam is void of any other light generated by a source different than the light source (Fig. 1).

Regarding claim 41, Tompkins teaches the method of claim 22 wherein the generating comprises generating all light of the light beam using the light source (Fig. 1).

Regarding claim 42, Tompkins teaches the method of claim 22 wherein the controlling comprises: applying a control signal to control the light source; and varying the control signal responsive to the sampled light beam (Fig 1; Col. 8, lines 65-68).

Regarding claim 43, Tompkins teaches a method of varying comprising varying to control the light source to generate the light beam having a substantially constant intensity (Col. 8, lines 65-68).

Regarding claim 44, Tompkins teaches the device of claim 29 wherein the sampling assembly is configured to initiate start-of-scan operations to write the scan lines onto the photoconductor (Col. 9, lines 11-28).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5, 11, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tompkins in view of Hsu (6,263,002).

With regard to claims 5, and 11 Tompkins discloses the claimed apparatus except for the light source comprising a vertical cavity surface emitting laser diode (VCSEL). Hsu discloses a light source comprising a VCSEL (Col. 1, lines 8-30). Therefore, it would have been obvious to one skilled in the art at the time of the invention to use a VCSEL as a light source because their unique structure offers significant advantages over conventional edge-emitting lasers (Col. 1, lines 9-10).

As to claim 26, Tompkins discloses the claimed method except for the light source comprising a vertical cavity surface emitting laser diode (VCSEL). Hsu

discloses using a light source comprising a VCSEL (Col. 1, lines 8-30). Therefore, it would have been obvious to one skilled in the art at the time of the invention to use a VCSEL as a light source because their unique structure offers significant advantages over conventional edge-emitting lasers (Col. 1, lines 9-10).

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tompkins in view of Araki (5,832,012).

Regarding claim 29, Tompkins discloses the claimed hard imaging device comprising: a photoconductor (Fig. 1, #38); a laser scanning apparatus configured to write scan lines of information onto the photoconductor, the laser scanning apparatus comprising: a laser configured to generate a light beam (Fig. 1, #10); a scanning device optically coupled with the laser and configured to scan the light beam along the photoconductor to form the scan lines (Fig. 1, #34); a sampling assembly configured to sample the light beam; and a control system configured to control an intensity of the light beam generated by the laser responsive to the sampled light beam (Col. 8, lines 65-68; Col. 4, lines 10-12, "beam intensity correction"). Tompkins does not disclose an image engine. Araki does teach an image engine configured to form hard images from the written scan lines using media (Col. 5, lines 7-11). Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify the teaching of Tompkins to include an image engine for the purpose of transferring an image to paper or other media.

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tompkins.

With regard to claim 30, Tompkins teaches the device of claim 29, wherein the control system is configured to receive a signal from the sampling assembly corresponding to the sample light beam and to control a drive level of the light source based on the received signal ("acousto-optic modulator", Fig. 1, #20; Col. 8, lines 65-68; Col. 4, lines 10-12, "beam intensity correction").

New claims 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tompkins in view of Araki (5,832,012).

Regarding claim 33, Tompkins discloses the claimed invention except the reference does not explicitly disclose that the light source comprises a laser and only a laser configured to generate the light beam. Araki discloses the claimed invention wherein the light source comprises a laser and only a laser configured to generate the light beam (laser diode 8). Therefore it would have been obvious to a person of ordinary skill in the art at the time of the invention to have the light source comprised of a laser, for the purpose of generating the beam of coherent light.

Regarding claim 34, Tompkins discloses the apparatus of claim 33, wherein the laser is configured to generate all of the photons of the light beam which is sampled by the detector assembly (see Fig. 1, only one laser).

Regarding claim 35, Tompkins discloses the apparatus of claim 33 wherein the laser is configured to generate the light beam void of any light received by the laser (Fig. 1; col. 4, lines 28-).

Regarding claim 36, Tompkins discloses the claimed apparatus but may not explicitly disclose a control system configured to provide a control signal to control the drive level of the laser during the generation of the light beam, and wherein the control system is configured to vary the control signal responsive to the sampled light beam. Araki (5,832,012) teaches such a control system (Fig. 1; Abstract). It would have been obvious to a person of ordinary skill in the art at the time of the invention to combine such a control system with the apparatus of Tompkins for the purpose of adjusting the intensity of the laser beam (Araki, abstract).

Regarding claim 38, Tompkins discloses the claimed apparatus except the reference may not explicitly disclose a light source comprising only a laser configured to generate the light beam. Araki discloses such an apparatus with the light source comprising a laser configured to generate the light beam (Fig. 1). It would have been obvious to a person of ordinary skill in the art at the time of the invention to have the light source comprise only a laser for the purpose of generating the beam of coherent light.

Regarding claim 39, Tompkins discloses the apparatus of claim 14 except the reference may not explicitly disclose that the control system is configured to maintain the drive level of the laser responsive to the indication. Araki does teach such a control system (Fig. 1, #6, #7, #1). It would have been obvious to a person of ordinary skill in the art at the time of the invention to combine such a control system with the Tompkins device for the purpose of regulating the intensity of the light beam.

Regarding claim 40, Tompkins discloses the apparatus of claim 22 except the reference may not explicitly disclose that the generating comprises generating using the light source comprising a laser, and the controlling comprises controlling the laser using the sampled light beam. Araki discloses such a device in Figure 1. It would have been obvious to combine the generating and controlling aspects of the Araki device with the apparatus of Tompkins for the purpose of directly controlling the drive level of the laser beam.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rory Finneren whose telephone number is (571) 272-2243. The examiner can normally be reached on Mon. - Fri. 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Oh Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Minsun Harvey
Supervisory Patent Examiner
Art Unit 2828

RBF